# TRACE ISOTOPIC ANALYSIS OF STARDUST

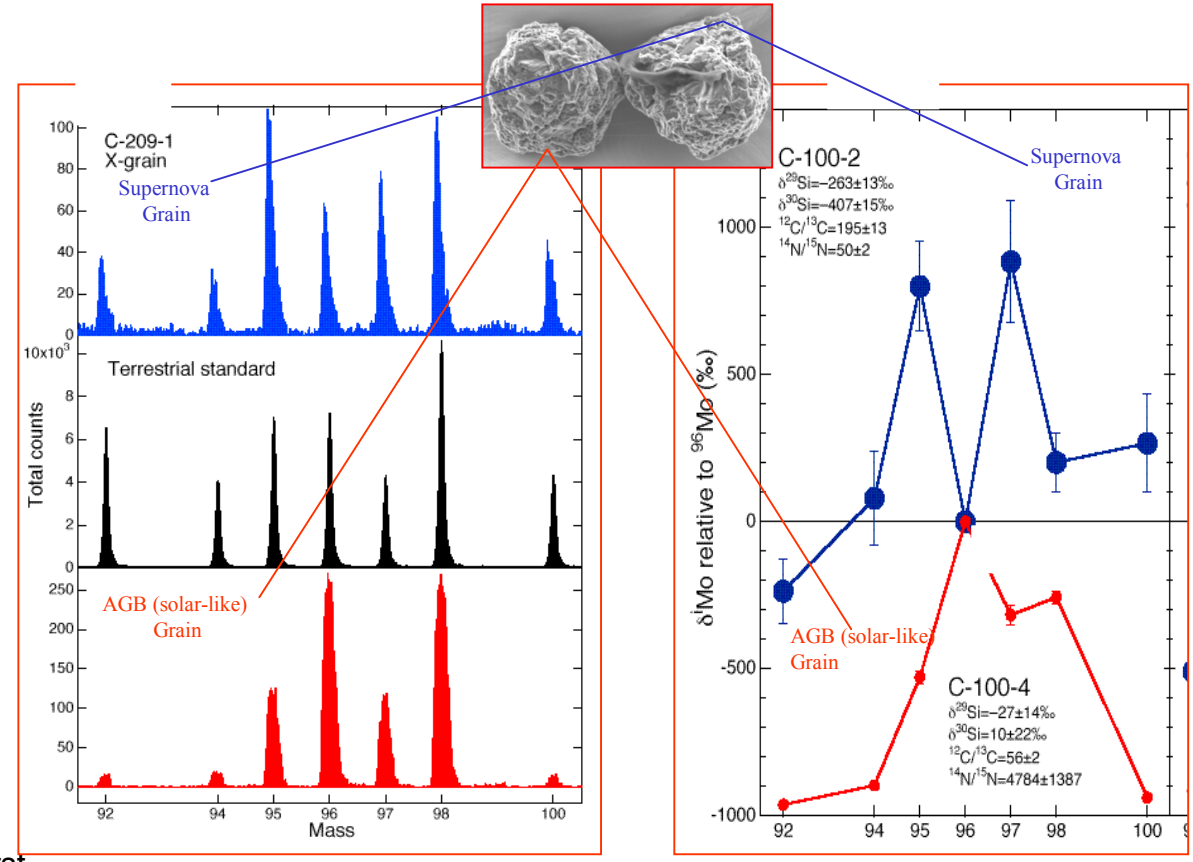
1 micron SiC grains culled from the Murchison meteorite contain an isotopic record of the star that they condensed around.

This unique sample allows astronomical observation with a mass spectrometer.

One of the grains at left condensed around a star such as our sun. The heavy elements in the grain demonstrate a clear *s*-process nucleosynthetic signature. As expected from a low mass star.

The other grain condensed around a supernova and shows an isotopic record consistent with a new "neutron burst" nucleosynthesis mechanism. That is similar, but distinct from the *r*-process.

These results directly measure for the first time the mechanisms responsible for the origin of the elements. They also demonstrate the ability of SARISA to measure nanoparticulate samples.




Isotopic Analysis of ppm Mo in two SiC extraterrestrial grains and in a terrestrial standard.